平成 25 年度日欧共同公募委託研究終了レビュー評価結果（概要）

課題番号　167
課題名：新世代ネットワークの実現に向けた欧州との連携による共同研究開発（研究期間　平成 25 年度～平成 27 年度）

評価ランク：

- **S　Excellent progress** (the project has fully achieved its objectives and technical goals for the period and has even exceeded expectations).
- **A　Good progress** (the project has achieved most of its objectives and technical goals for the period with relatively minor deviations).
- **B　Acceptable progress** (the project has achieved some of its objectives; however, corrective action will be required).
- **C　Unsatisfactory progress** (the project has failed to achieve key objectives and/or is not at all on schedule).

課題	研究課題名	受託者（共同研究者）	評価
ア	モノのネットワークとクラウドを融合するネットワークサービス基盤の研究開発 副題：スマートシティにおける市民の影響力を拡張する Cloud of Things 基盤技術[ClouT]	東日本電信電話株式会社 （慶應義塾大学 SFC 研究所・徳田英幸教授、国立情報学研究所、日本電信電話株式会社、パナソニックシステムネットワークス株式会社） （Commissariat à l'énergie atomique et aux énergies alternatives(仏)，Engineering Ingegneria Informatica SpA(伊)，University of Cantabria(西)，STMicroelectronics S.r.l.(伊)，Santander City Municipality(西)，Genova Municipality(伊)）	A
主な評価コメント	The project has made remarkable progress with respect to the identified objectives, reflected in very good project outcomes. The design of the architectural building blocks and the corresponding components has been finalized, as well as their implementation and integration towards the provision of specific targeted solutions (e.g. IoT kernel, sensiNact gateway, etc) and towards the overall ClouT platform. The integration outcomes and in general the project results highlight the excellent collaboration between European and Japanese partners, which was even further improved during the last year of the project. In terms of the infrastructure, it is quite positive that ClouT has utilized a very large number of physical (30,000 in Santander, 150 in Genova, 35 in Fujisawa, etc) and virtual sensors (500,000 nodes with 10 sensors in each node). The identified pilots have been developed and deployed (engaging more than 5,000 citizens and policy makers) in order to validate the majority of the research outcomes but specific items such as the mashup editor have not been validated through the project pilots. A new field trial was deployed in Fujisawa, including garbage cars equipped with sensors. Moreover, an EU-Japan intercontinental use case/application has been deployed. The dissemination has been excellent, with several dissemination activities performed. A very good initiative from the ClouT consortium refers to the book that has been compiled by the project partners and will be released in July 2016 (edited by Wiley). In terms of exploitation, scientific exploitation is very good, but business exploitation needs to be more concrete, following the partners' interests on specific components/outcomes of the project.		

課題	研究課題名	受託者（共同研究者）	評価
イ	ネットワークテストベッドを活用した日欧における実証的共同研究 副題：大規模情報通信基盤実証実験のための連携テストベッド[FELIX]	産業技術総合研究所 （ＫＤＤＩ株式会社） （Instytut Chemii Bioorganicznej Pan(Poland)，　Nextworks(伊)，　Fundacio Privada I2CAT　Internet I Innovacio Digital a CATALUNYA(西)，SURFnet bv(蘭)，　European Center for Information and Communication Technologies(独)，　IMINDS VZW(白)）	A

主な評価コメント

FELIX was part of the first group of collaborative research and innovation projects between Europe and Japan in the area of Future Internet. During its life, a lot of useful and high quality results have been achieved. Members of the consortium from both regions have been working together with a high level of complementarity and cooperation. Such successful collaboration is a strong basis to further continue and even intensify joint activities in this area.

The third year of the FELIX project was mainly focused on validating the FELIX architecture, with emphasis on the management functionality of the FELIX infrastructure. The six use cases defined in the first year were consolidated in three experimental scenarios, which were deployed in order to test and validate the components of the Felix Management Stack (FMS). The experience gathered was fed back to the refinement and enhancement of the components developed in WP3 aiming at a stable open source software.

Globally, the FELIX workplan has been carried out as intended. The project has achieved most of its objectives and managed to deliver an operational infrastructure across Europe and Japan, which is capable of deploying a variety of experiments encompassing a wide set of requirements. Although the wider use and adoption of the project outcomes remains a challenge, carrying such complex activity across such large geographical scale is seen as a very positive development.

Experiences obtained while designing, implementing and deploying the FELIX architecture and use cases should be of significant value to other ongoing and future activities by researchers and practitioners, from Europe and Japan of course but also from other countries. The establishment of NSI-based connectivity between testbed facilities in Europe and Japan is one of the areas in which the lessons learned from the FELIX activities will provide useful guidance to future projects.

課題	研究課題名	受託者（共同研究者）	評価
ウ	コンテンツ指向ネットワーキングによる省エネルギーコンテンツ配信の研究開発 副題：グリーンコンテンツ指向ネットワーキングと応用[GreenICN]	ＫＤＤＩ研究所 （日本電気株式会社、パナソニックアドバンスドテクノロジー株式会社、東京大学・浅見徹教授、早稲田大学・中里秀則教授、大阪大学・長谷川亨教授） （Georg-August-Universität Göttingen（独），NEC Europe（英），CEDEO（伊），Telekomunikacja Polska – Orange Labs Poland(Poland)，University College London（英），Consorzio Nazionale Interuniversitario per le Telecomunicazioni（伊））	S

主な評価コメント

GreenICN finalized the definition of usage scenarios and requirements for the Information Centric Networking (ICN) paradigm, and developed important and novel components to support ICN communications and reduce energy bill as:

(1) the monolithic middleware layer, built around the MPEG middleware, that runs in end user devices and that interfaces the application layer with the ICN network layer,
(2) novel security mechanisms for communications in fragmented networks,
(3) pub/sub solutions to enable content networking and content localization,
(4) networking solutions to enable mobility of both producers and consumers, and most importantly, and
(5) energy efficient solutions and models to enable local traffic sharing and reduce power consumption in base stations and end user devices.

The project also spent a considerable effort in developing applications and running experiments to prove the feasibility of the proposed solutions in the considered scenarios, and in setting up testbeds and integrated prototypes to demonstrate the capacity of the solutions to work together towards the defined target.

The project has contributed to the state of the art regarding ICN and left substantial impact by publishing papers and presenting in numerous conferences and journals, such as 41 conference articles, 21 workshop articles, 16 poster/demonstrations, 20 journals, and 1 book/chapter, including three best paper awards: Best Paper Award in ACM ICN 2014 and Best Paper Award in IFIP Networking 2015. As well as this, the standardization activity of the project is on a very good level with contributions at IETF (CDNI), IRTF (ICNRG), MPEG, and ITU-T (Focus Group on Disaster Relief Systems, Network Resilience and Recovery (FG-DR&NRR)), and monitoring of relevant 3GPP standards.